Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
GPS Networking, Inc.	)	**RM-11002**
	)	
Petition for Rulemaking	)	
And Request for Waiver	)	

GPS NETWORKING'S REPLY TO OPPOSITION TO PETITION FOR RULEMAKING AND REQUEST FOR WAIVER

GPS Networking is filing a Reply to the Opposition filed by the GPS Industry Council in response to GPS Networking's Petition for Rulemaking and Request for Waiver. In this Reply, GPS Networking presents some alternatives that may simplify the provision of regulatory clearance for the proper, authorized use of GPS re-radiation kits.

I. BACKGROUND

On May 3, 2004, GPS Networking filed a Petition for Rulemaking and Request for Waiver (hereinafter "Petition") seeking Commission action on a device known as a GPS re-radiation kit. In that Petition, GPS Networking proposed that the Commission consider amending Section 15.211 of its Rules to allow the indoor use of GPS re-radiation kits. In the Petition, GPS Networking was proposing that indoor use would be underground, in a lab, or otherwise in a safe and secure environment where spurious emissions would not create the potential for any signal overlap where the sky-based satellite signals were present. The Petition

also requested, if an amendment to Section 15.211 was not the appropriate regulatory framework for this action, that the Commission amend such other of its regulations as would be appropriate to allow for the proper use of GPS re-radiation kits.

On June 25, 2004, the FCC issued a Public Notice that it had received the Petition for Rulemaking, Report No. 2662. On July 26, 2004, the GPS Industry Council filed an Opposition to the Petition for Rulemaking (hereinafter "Opposition"). This Reply, filed in accordance with Section 1.405 of the Commission's Rules, addresses some of the issues raised in that Opposition, and renews GPS Networking's request that the Commission take such action as is in the public interest to create a framework for the proper manufacture and sale of GPS re-radiation kits.

II. DISCUSSION

A. GPS Networking does not seek to avoid regulation of re-radiation kits

In its Petition, GPS Networking selected Section 15.211 as a potential regulatory provision to allow action by the FCC not because it was seeking to avoid regulation, but because there were few alternatives that seemed to allow the Commission to act. As stated in the Petition, the spectrum used by re-radiation kits is allocated for space to ground radionavigation, and it is licensed to the federal government. Thus, the Commission may be somewhat limited in the types of regulatory provisions that it may be able to apply to this situation. In meetings with Commission staff prior to the Petition being filed, GPS Networking requested that the FCC create a database where information about installed kits be kept. At that time, the Commission was uncertain whether such an approach would be necessary particularly since GPS Networking specified that the use of re-radiation kits would be in locations where no sky-based signal could reach. Nonetheless, the Commission needs some provision(s) which will govern these devices.

In light of the GPS Industry Council's strenuous objections to the marketing of "GPS re-radiation kits on an unlicensed basis under the cover of an existing rule that applies to tunnel radio systems," *Opposition at 2,* GPS Networking proposes that this proceeding be used to formulate a reasonable, safe, and efficient regulatory process that will allow the marketing, sale, and use of its re-radiation kits. GPS Networking is committed to compliance with the Commission's regulations and has consistently demonstrated its willingness to seek productive solutions to the current regulatory challenges. At this point, GPS Networking has discussed with the GPS Industry Council setting up one or more meetings to work through the issues surrounding GPS re-radiation kits. Through meetings, we hope to define some mutually acceptable conditions which would govern the proper use of GPS re-radiation kits. When we have defined those conditions, we hope to submit additional filings with the Commission. Other interested parties are welcome to participate in those discussions.

GPS Networking offers below a starting point for a proper regulatory framework governing GPS re-radiation kits that are used in locations where sky-based GPS satellite signals cannot reach. Re-radiation kits fill an important need in the growing demand for location-based technologies. GPS Networking set forth in some detail in its Petition some of the many public safety, military, and aviation applications of this technology. While the GPS Industry Council dismisses those applications of the technology as "overstated or of limited value" *Opposition, at 1*, the list of uses and benefits from use of re-radiation kits is based upon demand from the marketplace. Prior to the FCC's involvement in 2001, all four military services had purchased and installed re-radiation kits; the Federal Aviation Administration had purchased and installed re-radiation kits; more than 10 members of the GPS Industry Council had purchased and installed re-radiation kits; more than 8 fire departments use re-radiation kits; and even Andrews

Air Force Base installed re-radiation kits in the hangar where Air Force One is kept. This proposal for a regulatory framework is based upon provisions used to govern ground penetrating radar in Section 15, Subpart F of the Commission's rules. This is a starting point, and GPS Networking is willing to discuss other options that will balance the benefits of re-radiation with the need for safeguards related to GPS.

GPS Networking proposes that the Commission create a regulatory framework that would permit only a limited pool of purchasers to buy re-radiation kits, create a database for who has purchased the kits and where they are installed, and finally create a certification process so that each installation be properly certified that it is in compliance with any limitations outlined by the Commission. Finally, there could be a labeling requirement that would require posting a sign in an area where a re-radiation kit is operated. With this sort of regulatory framework, it would be possible to track the purchase and installation of re-radiation kits. The GPS Industry Council suggests that licensing could be made part of the procurement process. *Opposition at 3.* That would presume that there is a method for licensing these devices. As noted in the Petition, there is no clear regulatory method for licensing these devices. The method outlined here provides for Commission regulation and oversight while streamlining the tracking of essential information.

1. Limited Pool of Purchasers

GPS Networking has reviewed the Commission's regulations in Subpart F of Part 15 of the Commission's Rules. And, as set out in Sections 15.507 and 15.509, GPS Networking believes that it is possible to define a pool of eligible purchasers for re-radiation kits to ensure that only responsible parties who need the devices are able to secure them. GPS Networking

proposes the following as a possible list of those who would be eligible to purchase re-radiation kits:

- Law enforcement, fire, and rescue organizations operating under the auspices of a state or local government;
- Defense contractors operating under a specific mandate from the Department of Defense;
- Companies in the aviation industry who are working on navigation matters and who receive permission to purchase from the FAA;
- Companies in the GPS industry, including companies producing GPS products;
- Specifically authorized resellers who are certified by the FCC to resell these devices to authorized purchasers;
- CMRS providers who hold licenses from the FCC to operate commercial mobile radio systems and who are using re-radiation to enhance their E-911 location capabilities.

2. Track the location of installed re-radiation kits.

GPS Networking recommends that the Commission create an on-line database which will allow properly authorized purchasers of re-radiation kits to enter information regarding the ownership and location of the re-radiation kits in use. With help from GPS Networking, or a properly authorized reseller, it could be possible to track ownership and installation without creating a heavy burden on either the Commission or on the owner of a re-radiation kit. These devices have the advantage of being very efficient and economical, so we urge the Commission to consider a regulatory approach that maintains the efficiency and economy of the re-radiation kit even as it collects information that is necessary.

3. Create a certification process for the installed kits

GPS re-radiation kits are relatively uncomplicated devices, at first blush. Yet, GPS Networking has learned from experience that even these devices require a relatively careful installation to achieve the desired effect. All of the company's previous customers were in the categories listed above – aviation, public safety, defense, etc. All of those customers were intent

on proper, indoor, safe use of GPS re-radiation. Each sale and installation was accompanied by consultation on the proper installation to ensure that the kits were functioning appropriately. GPS Networking is proposing that each time a kit is installed, in addition to the filing made to indicate ownership and location, there be a certification process which confirms that the kit is properly installed indoors, with the kit in its original form – without added signal amplification, etc. This process could also be handled through an on-line filing.

4. Labeling

In a laboratory or hangar or fire engine bay, we recommend that the re-radiated area have a notice posted that a re-radiation kit is in use keeping GPS navigation systems live. Since the re-radiated signal will not extend beyond that enclosed area, the notice can be limited to the lab or hangar. Everyone working in the area will know that a re-radiation kit is in use, yet the notice seems to be the most practical way to alert any other visitors to this information. GPS Networking could include a notice with each kit that is sold, to simplify this process for customers.

B. Safe Use of GPS Re-radiation Kits Is in the Public Interest

In its Opposition, the GPS Industry Council dismisses the potential benefits of re-radiation kits to properly authorized purchasers. The Industry Council's objections seem to focus on what they believe is the inapplicability of Section 15.211 of the Commission's rules. GPS Networking believes that the proposed limitations on eligible purchasers, database of kits, and certification of installation address the concerns of the GPS Industry Council regarding unlicensed use. The facts remain the same; there are many benefits that derive from the proper use of re-radiation kits.

The GPS Industry Council has attempted to divert attention from the utility of re-radiation kits by raising threats of terrorist uses. Further, the GPS Industry Council has disingenuously suggested that the use of shielding and kill switches is proof that re-radiation kits are not safe to use. GPS Networking notes that the use of safety precautions in installing re-radiation kits is proof that responsible use is not only possible but it is beneficial. Customers who take such time and effort to ensure proper use illustrate that there are strong public interest reasons why re-radiation kits can be beneficial and that re-radiation kit users are concerned about public safety and the integrity of the GPS system. GPS Networking explained in its Petition a number of public safety, emergency response, and public interest applications of its technology, and those examples remain valid.

C. Phase 2 E-911 Location Information Is Not Threatened by Re-radiation Kits.

The GPS Industry Council has objected to the use of re-radiation devices because they perceive these devices will have a negative impact on E-911 location information. However, the GPS Industry Council posits that re-radiation kits would be installed in office buildings and shopping malls everywhere. That suggestion is not reasonable, and it takes to the point of absurdity the position offered originally by GPS Networking. As noted in Section A, above, with a limitation on authorized purchasers, this simply would never happen.

GPS Networking wishes to address more substantively the potential interaction – or lack thereof – between GPS re-radiation and E-911. First of all, any re-radiation kit will be installed indoors where no GPS signal reaches. In those locations, someone calling to report an emergency is likely to use a landline phone. Even if they use a wireless phone, the location the phone will transmit will be within 100 meters of the person's actual location, not miles away.

The Commission's records reflect that there are four primary E-911 Phase 2 technology solutions. Those include:

- E-OTD – a hybrid network/handset solution that does not rely on GPS chips in handsets
- TDOA – a network-based solution that relies on network signals to determine position. This solution does not rely on GPS chips in handsets.
- AOA – a network-based solution that relies on network signals to determine position. This solution is often used in conjunction with TDOA to provide more precise location information. This solution does not rely on GPS chips in handsets.
- A-GPS – a handset based solution that uses GPS chips in handsets, in combination with highly developed position determination software to offer relatively precise positioning.

GPS Networking is very hopeful that the full implementation of Phase 2 E-911 will be in effect soon. And, clearly we are mindful that the Commission must address this issue taking into account the fact that E-911 is important to the public and its health and welfare. There is no conflict however. The proposals offered by GPS Networking regarding re-radiation kits suggest that those kits be used *only* where GPS signals are not available. Even with A-GPS technology, there are still places indoors and underground where it is not possible to get a GPS satellite-based signal, at all. For those indoor locations, should a GPS-based E-911 phone find and use the re-radiated signal for its position, rescue workers will know the location of the caller within about 100 meters, not miles away. This is within the E-911 distance standards required by the Commission's Rules.[1]

D. There are Devices That May Be More Harmful Than Re-Radiation Kits

[1] It is possible that the GPS Industry Council does not fully understand re-radiation kits. There is a limited amount of low-loss RF cable that can be used between the rooftop antenna and the interior installation. While the cable is low-loss, it still creates some signal attenuation. It is that attenuation that caused the need for a signal amplifier to be added to the kit. Yet, even so the signal can only be brought a limited distance from the rooftop and that distance is 150 to 200 feet. The re-radiated signal may not specify the exact location of the person in the indoor lab, but it will not be off by very much distance, since the offset is limited by the cable length. When a system is purchased the distance from the rooftop antenna is one specification that must be determined before the purchase is complete so a proper system can be sold. This customization has always been part of the sales process.

The GPS Industry Council Opposition includes technical material that challenges the Petition on several points. First, the GPS Industry Council suggests that there may not be benefits from keeping GPS receivers live. GPS Networking's experience suggests otherwise.[2] Even one minute saved in getting to an injured person may make a difference, and that difference has prompted fire and rescue workers to implement use of re-radiation kits. But, there is also a peace-of-mind component: where there are re-radiation kits, fire and rescue workers can just glance at the on-board navigation systems in their rescue vehicles and know that those systems are working properly, without fear, worry, or wait. That gives them added sureness as they get ready to respond in an emergency**.** Another benefit of re-radiation of fire engine or ambulance bays is that a dispatcher or fleet manager will know that the on-board systems are working because each vehicle will have a position report while inside. Without this, a dispatcher may not have good information about which vehicles are where nor be able to determine which vehicles are ready to respond.

The military and the FAA have used re-radiation kits, and they have not submitted any information regarding any problems with signal interference or other problems. If there is additional information, we would be glad to incorporate it into any revised proposals.[3]

In its Opposition, the GPS Industry Council expressed concern about jamming and spoofing GPS. *Van Dierendonck Statement at 13.* This issue will be discussed when the parties

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[2] GPS Networking has worked extensively with GPS receivers, handheld and installed. It is true that newer receivers are better able to determine position locations more quickly than older receivers. Some of the earliest handheld receivers can take as much as 15 to 20 minutes to determine a location, if they are not used regularly. Thus, there is a range of time, and not every receiver uses the newest receiver technology. In any case, determining a position is not immediate from the moment the receiver is turned on.

[3] The GPS Industry Council suggests that re-radiation devices could be used to affect the navigation systems of missiles. Given the speed of travel of missiles, it is unlikely that a re-radiation kit could ever have an impact on missile flight, since the re-radiated signal only carries about 150 feet and the missile may be traveling at over 300 miles per hour. Therefore, it would only be in the vicinity of a re-radiation device for less than one second. This is because at 300 miles per hour, a missile will travel about 440 feet in a second.

meet. GPS Networking notes that there are other devices that might pose greater risks as jamming or spoofing mechanisms. It might be appropriate for there to be some regulatory provisions governing those devices as well.

III. Conclusion

In light of the GPS Industry Council's call for some regulatory oversight of GPS re-radiation kits, GPS Networking has offered a proposal that would allow the Commission to create a regulatory framework for re-radiation kits that is akin to the framework set out in Subpart F of Part 15 of the Commission's Rules. It seeks Commission action on this matter to further the public interest. GPS Networking will meet with and hopes to submit joint recommendations with the GPS Industry Council in this proceeding to ensure that the public is protected.

Respectfully submitted,

GPS Networking

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August 9, 2004